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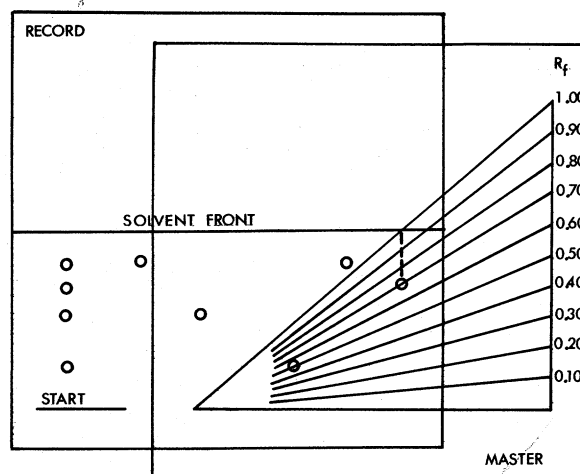
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The Use of Cellophane Sheets for Direct Reading and Recording of R_f Values

Recording the results of thin-layer chromatograms for future reference has always been a problem. Of the several solutions that have been advanced, the best appears to be photography. TL chromatograms have also been preserved by the application of aqueous dispersions or nonaqueous solutions of polyvinyl chloride or polyvinyl propionate polymer. This method gives true, 'life-sized' records. Still, subsequent handling, storage, and repeated viewing of these flaky films may prove cumbersome. Also, additional records of the colors, R_f values, and other data must be kept. We have circumvented these problems by applying the well-known tracing technique using cellophane sheets. A clear, transparent sheet of cellophane is superimposed on the developed chromatogram. (Paper-thin, pliable sheets of cellophane, 12-in. square, are commercially available.) The outlines of the developed spots are traced with a ballpoint pen. Inks of different colors may be used to mark colors, solvent front, or starting line. Subsequently, other pertinent data are recorded on the sheet. The sheets are compactly stored in a loose-leaf binder and data can be rapidly and visually compared by superimposing sheets—a technique not possible with other methods. Also, by superimposing sheets with similar data on freshly run TLC plates, one can determine the progress of the method and possibly identify unknowns, especially in a standardized method. Xerox copies of the final trace record are well suited for inclusion in reports.

A second important use of these clear cellophane sheets is in the direct reading of R_f values from paper or thin-layer chromatograms. A master sheet is constructed as shown in the figure. The whole sheet may

be used and a 250-mm ordinate can be subdivided into 2.5 mm per 0.01 R_f value. Distances in units of 0.10 R_f values are marked off every 25 mm and partially connected to the origin, as shown. In practice, the spaces are further divided into 0.05 R_f units (not shown) by using a different color ink. Thus, for a solvent front that has advanced 15 cm, the difference between 0.01 R_f values is 1.5 mm and the R_f value of a spot can easily be estimated within 0.01 units. For the actual reading of the R_f value of a spot, the master sheet is placed under the record sheet. The starting positions are aligned and the sheets are moved until the solvent front and the top line ($R_f = 1.00$) intersect directly above the spot. The R_f value is read directly, without calculations, from the master sheet.



Use of master sheet to read R_f values.